RTI Training

Our RTI Professional Services team is made up of the best and the brightest in the area of critical systems development. Building on our Connext solution, we have deployed some of the toughest distributed systems in the world. RTI will train your team, match your system requirements to a data distribution design, and provide project development support in order to mitigate your project risk, increase productivity and ensure quality in your final deliverable — often on a shortened schedule.

RTI provides critical solutions for large-scale process automation, financial services systems, advanced aerospace & defense combat systems, closed-loop robotics, highly-distributed traffic management programs and asset management systems. The RTI team leverages real-world experience building sophisticated distributed systems as well as our advanced internal research projects on systems technologies and architecture.

Benefits:

Bring your team up to speed quickly with hands-on training

Tailor your training to your budget, timing and project requirements

Understand middleware capabilities and how to apply them to your project

Learn best practices in the architecture of your distributed real-time system

Design your application for optimal efficiency from the start

Jump-start your team's productivity and accelerate your project via RTI Training. RTI's expert consulting team offers training options to take your team from project inception through deployment.

Training opportunities range from initial "QuickStart" training on middleware to modularized advanced topics such as trouble-shooting distributed applications and taking advantage of Quality of Service tuning. Additionally, we offer custom one-day or more in-depth analyses of your architecture, design, integration needs and application deployment.

World-Class Training Team

RTI training is led by members of RTI's consulting services group, a team with decades of experience in the design and implementation of distributed real-time applications. Areas of expertise range from military and aerospace to transportation, communications and industrial automation.

RTI, the industry leader in real-time messaging middleware, is uniquely experienced in the optimization and tuning of large scale, high-performance distributed systems. In addition to our middleware expertise, amassed pioneering the OMG Data Distribution Service standard, our expertise includes extensive knowledge of networking hardware, operating systems and protocol stacks—as well as their interactions. RTI also pioneered an off-the-shelf, real-time distributed data management solution based on standard SQL and DDS interfaces. We have decades of experience with fully-deployed, large-scale applications.

Tiered Training — Scales to Your Needs

QuickStart: Most new projects with RTI start with a three-day QuickStart training, which provides initial hands-on training on RTI products. These QuickStart sessions are tailored to the needs of your team and project and offer plenty of opportunity to interact with the instructor on your application's requirements. QuickStart trainings may be held onsite at your location or are offered at various locations worldwide.

As the name "QuickStart" implies, this 3-day onsite training course is designed to get your team up and running with RTI middleware as fast as possible. The QuickStart is a hands-on course that is taught by knowledgeable instructors with extensive experience building large-scale deployed middleware applications. Because of their real-world experience building applications, they are able to tailor the material to your particular requirements and are available to answer application-specific questions.

Sample QuickStart Course Outline

General Introduction
Objective: Understand RTI products and services, brief company history and schedule.

- Agenda review
- Examples of customer applications
- RTI products and services

DDS Introduction
(for Connext DDS compliant products)
Objective: Understand the problem that DDS solves; describe general concepts and terminologies in DDS.

- What is DDS?
- Evolution of the DDS communication model
- Entities in the DDS infrastructure
- Quality of Service parameters that govern those entities
- Demo of DDS at work

Quality of Service (QoS) Tuning
Objective: Gain detailed understanding of QoS parameters and what they can do.

- Data volatility and delivery
- Presentation options
- Redundancy measures
- User data delivery

Basic Hands-on Exercises
Objective: Use RTI tools to generate code and an application; modify QoS parameters to alter behavior.

- RTI tools
- "Hello World" publisher and subscriber
- RTI manual, API documentation
- Modifying default QoS

Dynamic Discovery
Objective: Understand the dynamic discovery process to be able to tune and configure according to your own requirements.

- Participant discovery phase
- Endpoint discovery phase
- Configuration parameters
- Tuning parameters

Keys and Instances
Objective: Understand the difference between topics, instances and keys; discuss use cases of these.

- Advantage of using keys
- Common use cases
- Relevant API calls and QoS parameters

Reliable Communication
Objective: Illustrate the send and receive queue management, timeout constraints and important events.

- Reliability mechanisms
- Reliability objects
- QoS parameters and default behavior
- Design challenge

Threading Model
Objective: Understand the underlying threads in RTI's implementation

- Database thread
- Event thread
- Receive thread
- Callbacks and settings for each thread

Listener Callbacks
Objective: Understand the different types of events and their corresponding listener callbacks.

- Listener hierarchy
- Callback ordering
- Status and event definitions

Multicast Communication
Objective: Understand how to use multicast to send/receive data.

- Receiver settings

Troubleshooting
Objective: Illustrate the various methods and tools used to trouble-shoot.

- Common design errors
- Common implementation errors
- Debugging tools and methods

Course Requirements
- Reasonable programming experience in C, C++ or Java on a major platform such as Windows, Linux or Solaris
- Laptop with either Windows XP or Linux 2.4 or 2.6.
- For Windows XP users: Visual Studio 2003 or Visual Compiler 6.0
- For Linux users: GCC 3.2.2 compiler

Advanced Modules — Mix and Match to Meet Your Project Needs

RTI offers advanced courses to supplement the QuickStart training, providing additional training as your team gains more familiarity with RTI middleware, and supplying explicit, detailed training on key concepts. The advanced courses are taught by RTI real-time networking experts with real world experience in designing and debugging distributed systems.

The advanced training courses are one day each, designed to be combined to create a three-day onsite training session. Sample training modules include:

How to Debug and Optimize Distributed Applications

Learn the secrets of debugging a complex distributed application in this intensive one-day course. This course will present techniques and patterns for troubleshooting discovery, performance and lost data problems when implementing systems using RTI middleware. Drawing on real-world examples, the course will demonstrate how to solve tricky networking problems. Topics include creating and interpreting logs; network monitoring and troubleshooting; using network tools such as rtiddsping, rtiddsspy and RTI Protocol Analyzer, and using RTI Analyzer to find programming errors that slow or block communication. This class is intended for existing customers who have a basic knowledge of RTI middleware and some application development experience.

Data-Centric Design

Take your networked applications to the next level through a data-centric design approach using Connext Messaging or Connext DDS. Data-centric design is the latest methodology for creating robust distributed systems by focusing on the data model.

This one day course teaches the data-centric design approach and how to develop a data-centric distributed system. During the course you will learn how to create a data model, manage the data distribution and build your system architecture around the data needs. Next the course will apply the data-centric concepts to RTI Connext: using IDL for the data model, setting QoS for data distribution, and

using RTI's database integration facilities to integrate real-time data distribution with a database or other enterprise application. This class is intended for those that have completed an RTI QuickStart training or Workshop.

Using Quality of Service Settings

Discover how to harness the power of RTI's rich set of Quality of Service (QoS) to maximize the reliability and performance of your application. This course starts with the fundamentals of QoS policies and how different QoS policy groups are related to RTI subsystems, entities and to each other. It then uses real-life examples to show how to set QoS policies to control a wide range of middleware behaviors such as reliability, persistence, failure detection, traffic shaping, transport configuration and more. Finally, the course discusses the causes of QoS incompatibilities and how to correct them. This class is intended for existing customers who have a basic knowledge of RTI products and some application development experience.

Course Details

For a more complete course description or to suggest additional training modules you would like to see, please contact us: solutions@rti.com or call us at +1-408-990-7400.

Customized Training and Short-Term Consulting

RTI offers a number of customized training and consulting options, from one-day consultations to full-scale design, development and integration consulting.

For additional training, if you have a particular training requirement, please let us know and we can develop a course module to meet your needs.

In addition to training, we offer short-term consulting packages designed to improve your project architecture and design, maximize your use of RTI's rich feature set and accelerate your middleware development and integration. These short-term consulting packages provide an affordable way to reap the benefits of RTI's expertise.
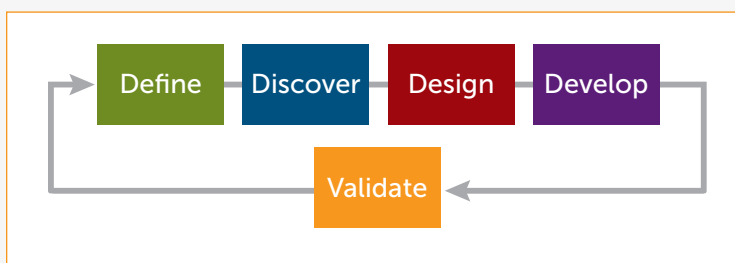
Our field-proven approach to projects and services is reflected in our flexible training program, supporting you through all phases of the application development lifecycle.

Architecture Study

An example of an RTI short-term consulting package is the RTI Architecture Study. With the Architecture Study, an RTI Services Consultant evaluates your application architecture to ensure it takes maximum advantage of RTI's feature set and performance potential.

Each RTI Architecture Study document is tailored for the particular needs of the customer. Example contents of an Architecture Study include:

- Requirements, System Overview, Core Concept Review
- Design Patterns
- Discovery and Tuning (domain binding, topology, discovery, threading and identification)
- Reliable Data Model
- Topic Design
- Communication Design Patterns (e.g., heartbeating, checkpointing)
- Operating System Tuning for Optimal Performance
- System Optimization, Framework Selection (operating system, network hardware and middleware configuration)
- Prototype Open Architecture Implementation
- Gap Analysis, proposed solutions for unmet requirements

Design Reviews

RTI experts can assess your middleware design, providing you with an efficient and effective way to ensure optimal application design early in your project.

Additionally, we offer a more complete four-week on-site Design Support Package which provides expert installation, design, and system support.

Contact Us

To find out more, please email solutions@rti.com or call us at +1-408-990-7400.

About RTI

Real-Time Innovations (RTI) is the Industrial Internet of Things (IIoT) connectivity company. The RTI Connext® databus is a software framework that shares information in real time, making applications work together as one, integrated system. It connects across field, fog and cloud. Its reliability, security, performance and scalability are proven in the most demanding industrial systems. Deployed systems include medical devices and imaging; wind, hydro and solar power; autonomous planes, trains and cars; traffic control; Oil and Gas; robotics, ships and defense.
RTI is the largest vendor of products based on the Object Management Group (OMG) Data Distribution Service™ (DDS) standard. RTI is privately held and headquartered in Sunnyvale, California.

rti

Your systems. Working as one.

CORPORATE HEADQUARTERS
232 E. Java Drive
Sunnyvale, CA 94089
Tel: +1 (408) 990-7400
Fax: +1 (408) 990-7402
info@rti.com
www.rti.com